

## The Anomuran Crabs (including Thalassinideans) of Cheju Island and its Adjacent Waters, Korea (Crustacea: Decapoda)

Kim, Hoon So<sup>2</sup> and Kim, Chang Bae

(Department of Zoology, College of Natural Sciences, Seoul National University,  
Seoul, 151 Republic of Korea)

濟州島 海域의 異尾類 (甲殼類: 十脚類)

金 熏 洙 · 金 昌 培

(서울대학교 自然科學大學 動物學科)

### 摘 要

1986년 9월 30일부터 1987년 4월 24일까지의 조사기간에 제주도의 12개 지소에서 채집한 표본들과 조사기간 이전에 추자군도를 포함한 제주도 해역에서 채집된 미동정 표본들을 동정하고 문헌상의 기록들을 종합하여 제주도 해역 집게류의 분류목록을 작성하였다. 이 분류목록에는 9과 34종이 포함되어 있다. 이 중에서 제주도 해역 미기록종은 2종이었고, *Dardanus pedunculatus* (Herbst)는 한국 미기록종이므로 새로이 기재하고 그림도 작성하였다. 제주도 해역의 집게류 34종은 한국기지종 58종의 58.6%에 해당되며 34종 중에서 17종(50%)은 제주도 해역에서만 기록되었다. 34종 중 7종(20.6%)이 남방형이었고 34종 중 서식처가 밝혀진 24종 중에서 사질과 암석 바닥에 서식하는 종이 18종(75%)이었다. 이와 같은 사실들은 제주도 해역의 해황과 제주도 연안의 저질과 일치한다.

Key words: Crustacea, Decapoda, Anomura, Cheju Island, Korea, Systematics

### INTRODUCTION

On the systematic study of Korean anomurans, Kim (1973) brought together all the species reported up to that time to publish the monograph. In his monograph, Kim described 45 anomuran species

본 연구는 1986년도 문교부 학술연구조성비에 의해 “한국산 동·식물의 종속지적 연구(III)”라는 제목하에 연구된 것의 일부임.

in 8 families and gave a full historic review of the previous studies to his monograph. Since then, 4 species were reported as new to Korean fauna by Kim and Choe (1976) and among 8 species collected from Mara Islet (Cheju Island) by Oh (1983), 3 species were unrecorded ones from Korea. Kim (1985) described 31 species, 5 species of which were newly known ones from Korea. Besides those publications mentioned above, Kim (1973a), Kim and Lee (1978), Kim *et al.* (1979), Kim, Lee and Kim (1979), Kim *et al.* (1981), Kim and Choe (1981), Kim and Kwon (1982), Kim *et al.* (1983), Lee *et al.* (1984), Lee *et al.* (1985) and Kim and Kim (1985) reported anomuran fauna in their local survey reports.

In Cheju Island and its adjacent waters, Kim and Rho (1971) reported 17 anomuran species in 4 families from Cheju Island. Kim and Kim (1986) included 8 anomuran species in 5 families in their survey report from Ch'uja-do Islands.

As a result of the previous researches, 57 anomuran species in 12 families were known in Korean waters, of which 31 species in 8 families were reported in Cheju Island and its adjacent waters. But, synthetic researches of anomuran crabs are needed, especially in Cheju Island and its adjacent waters, where many geographically restricted species were found (16 of 31 species were recorded only in Cheju Island and its adjacent waters prior to the present report). Thus, in the present report the authors intended to grasp overall anomuran fauna in Cheju Island and its adjacent waters based upon the present new materials and the literature records for the better understanding of the Korean anomuran fauna and their geographical distribution.

## MATERIALS AND METHODS

The present new materials consist the specimens obtained during the period of survey from September 30, 1986 to April 24, 1987 from the 12 localities in Cheju Island and previous specimens collected before this survey and not reported (Fig. 1). Moreover, the authors included literature records made before the present report.

The collections were carried out in intertidal zone habitats. In addition to those materials, considerable animals inhabiting in shallow waters were collected in fish traps or nets. The materials were preserved in 95% alcohol. All specimens were examined with stereomicroscope and figures were prepared with a drawing tube mounted on a stereomicroscope. The authors followed Bowman and Abele (1982) for the classification of taxa above the family level.

All specimens reported are deposited in the Department of Zoology, Seoul National University.

## SYSTEMATIC ACCOUNT

The following systematic account includes all anomuran species which appeared in literature records and newly examined in the present report. In this systematic account, the species marked with an asterisk (\*) are found only in the Cheju Island and its adjacent waters in Korean waters, the ones with double asterisks (\*\*) are unrecorded by this time in Cheju Island and its adjacent waters and the ones with triple asterisks (\*\*\*) is newly known from Korea. Under each species' name, the localities are cited from literature records and then also is given the material examined when specimens were observed. For the localities which appeared in the literatures before 1973, only "Kim, 1973" is cited because the localities are cited in his book, and in the material examined the collectors' names are

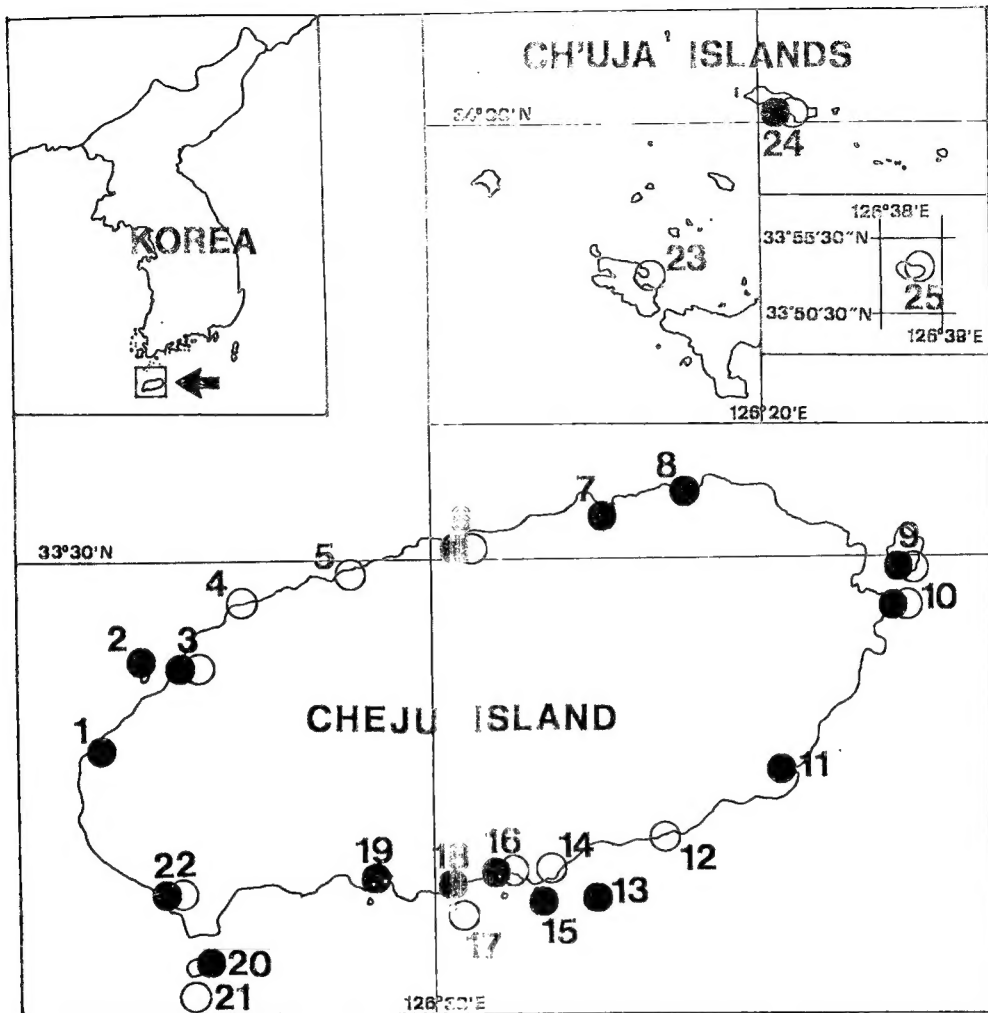


Fig. 1. The map showing localities in Cheju Island and its adjacent waters where previous and present materials were collected. 1, Shinch'ang (新昌); 2, Piyangdo (飛揚島); 3, Hallim (翰林); 4, Aewöl (涯月); 5, Ihori (梨湖里); 6, Cheju (濟州); 7, Hamdök (咸德); 8, Kämnyōng (金寧); 9, Udo (牛島); 10, Sōngsanp'o (城山浦); 11, P'yosōn (表善); 12, Namwōn (南元); 13, Chigwido (地歸島); 14, Pomog-ri (南木里); 15, Supsōm (金섬); 16, Sōgwip'o (西歸浦); 17, Pōmsōm (범섬); 18, Pūphwan (法還); 19, Taep'o (大浦); 20, Kap'ado (加波島); 21, Marado (馬羅島); 22, Mosūlp'o (慕瑟浦); 23, Sangch'ujado (上楸子島); 24, Hoenggando (橫干島); 25, Sasudo (泗水島). (●: present report; ○: literature record)

not given in the case that the collectors are the present authors themselves.

Superclass Crustacea Pennant, 1777	갑각 상강
Class Malacostraca Latreille, 1806	연갑 강
Subclass Eumalacostraca Grobben, 1892	진연갑 아강
Superorder Eucarida Calman, 1904	진하 상목
Order Decapoda Latreille, 1803	십각 목
Suborder Pleocyemata Burkenroad, 1963	포란 아목

Infraorder Thalassinidea Latreille, 1831      쪽 하목  
 Superfamily Thalassinoidea Latreille, 1831      쪽 상과  
 Family Callianassidae Dana, 1852      쪽불이 과

1. ***Callianassa japonica*** Ortmann, 1891      쪽불이

Material examined: Söngsanp'o, 6♂♂, 7♀♀, Feb. 12, 1987 (H.S. Kim).

Family Upogebiidae Borradaile, 1903      쪽 과

2. ***Upogebia major*** (De Haan, 1849)      쪽

Sögwip'o (Kim, 1973)

Material examined: Söngsanp'o, 3♂♂, 3♀♀, Feb. 12, 1987 (H.S. Kim).

Infraorder Anomura H. Milne Edwards, 1832      이미 하목  
 Superfamily Coenobitoidea Dana, 1851      원손집게 상과  
 Family Diogenidae Ortmann, 1892      넓적원손집게 과

3. ***Clibanarius virescens*** (Krauss, 1843)      청색가로가위집게

Marado (Oh, 1983); Sögwip'o (Kim, 1985)

4. ***Dardanus arrosor*** (Herbst, 1796)      털줄원손집게

Cheju (Kim, 1973); Hallim (Kim, 1973); Mosölup'o (Kim, 1973); Sögwip'o (Kim, 1973)

Material examined: Kümnyöng, 1♀, Apr. 24, 1987; Sögwip'o, 1♂, 1♀, Apr. 23, 1987; Hallim, 1♂, Sep. 30, 1986 (H.S. Kim); Sögwip'o, 2♂♂, Feb. 11, 1987 (H.S. Kim); Sögwip'o, 1♂, Aug. 16, 1985 (H.S. Kim); Cheju, 4♂♂, 2♀♀, Apr. 30, 1985 (H.S. Kim); P'yosön, 1♂, Aug. 15, 1985.

5. ***Dardanus crassimanus*** (H. Milne Edwards, 1836)      벽돌길원손집게

Sögwip'o (Kim, 1973)

6. ***Dardanus impressus*** (De Haan, 1849)      두드러기원손집게

Sögwip'o (Kim, 1973)

Material examined: Sögwip'o, 1♂, Aug. 16, 1985 (H. S. Kim).

7. ***Dardanus pedunculatus*** (Herbst, 1804)      굵은눈원손집게 (신칭)      (Fig. 2)

*Pagurus asper* De Haan, 1849 (pp. 204, 208, pl. 49, fig. 4); Stimpson, 1858 (p. 233); 1907 (p. 204).

*Dardanus haannii* Rathbun, 1902 (pp. 34-35); Miyake, 1981 (p. 644, fig. 1083).

*Dardanus pedunculatus*: Lewinsohn, 1969 (pp. 29, 31); Holthuis & Sakai, 1970 (p. 96); Miyake, 1978 (pp. 60-61, text-fig. 21); 1982 (p. 108, pl. 36, fig. 6).

Material examined: Sögwip'o, 1♀, Apr. 23, 1987 (H.S. Kim).

Measurement: length of shield = 8.9 mm; width of shield = 8.7mm.

Colour in alcohol: Carapace light-purple. Eyestalk reddish, with white crossbands behind cornea and base of stalk. Ambulatory legs light yellow and dactylus light purple. Left cheliped light purple, dorsal surface of carpus, palm and movable finger purple.

Description: Shield with length approximately equalling width; middle part of dorsal surface smooth; posterior part of dorsal surface with a furrow in the shape of the letter V. Rostrum not distinct; two lateral prominences developed and its tip smooth and rounded. Eyestalk short and thick and slightly shorter than antennal peduncle. Ophthalmic scales triangular; inner margin curved exteriorly; lateral and mesial margin expanded; distal margin of left ophthalmic scale with 2 spines in middle part and terminating with 1 spine and setae, distal margin of right terminating with 2 spines and setae. Dorsolateral distal angle of basipodite of antennal peduncle terminating in strong spine; mesial margin unarmed; dorsomesial distal angle with prominent spine. Scaphocerite exceeding distal end of

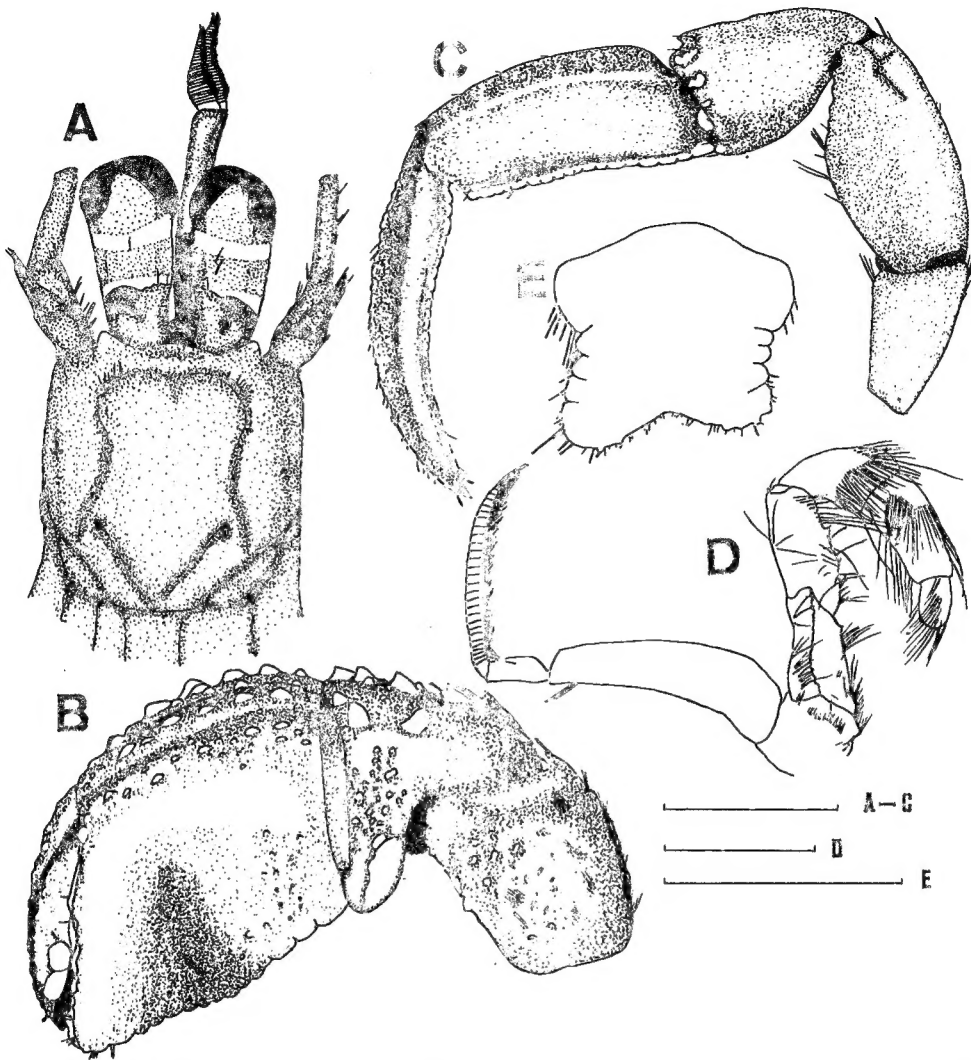


Fig. 2. *Dardanus pedunculatus* (Herbst, 1804), female. A, anterior part of the body; B, left cheliped; C, left second ambulatory leg; D, third maxilliped (left part); E, telson. Scale bars equal 5mm (A-C) and 2.5mm (D, E).

penultimate segment of antennal peduncle; terminating in strong spine; mesial margin with row of 4 spines and setae; left scaphocerite with additional 2 teeth in mesial margin; lateral margin with 1 subterminal spine. Ischium of third maxilliped with 1 spine on the ventral margin and crista dentata well developed; ventral margin of merus with 2 spines and 1 minute tubercle, partially obscured by setae, dorsodistal margin with prominent spine. Left cheliped far larger than right; one transverse furrow, scattered tubercles and tufts of setae on the outer surface of merus; upper margin of outer surface with stripes of tufts of setae; dorsal surface terminating with one acute spine; lower distal margin with small, acute teeth; inner margin expanded, with 5 spines, of which one at proximal end is the strongest and one strong protuberance. Upper margin of outer surface of carpus with scattered spines and small tubercles; lower margin interspersed with denticles; innermost part of dorsal surface with longitudinal row of 4 acute spines; anterior margin with 4 spines; inner surface unarmed and smooth. Dorsal surface of palm with 4 longitudinal rows of tubercles and 2 longitudinal furrows: innermost

row of 4 tubercles run along the proximal three-fourths of the palm and next row of 4 tubercles run along the distal half; in upper margin spines stronger and spiniform; lower part of outer surface generally smooth, interspersed with rounded tubercles; lower margin with row of small teeth and tufts of setae. Outer surface of movable finger with 3 longitudinal rows of small rounded tubercles; cutting edge with 5 strong teeth and terminating in small corneous claw; movable finger fitting the immovable finger; inner distal margin of immovable finger with row of tubercles. Second ambulatory leg slightly longer than first; dactylus longer than propodus. Lower distal margin of merus of left second ambulatory leg with row of denticles and setae; distal margin of carpus with tetralobed and bilobed tubercles and dorsodistal margin with prominent spine; upper margin of propodus serrated weakly, dorsolateral margin ridged sharply, distal margin with a few tubercles; dactylus curved, lower and upper margin with a row of teeth, in upper margin they spiniform, and middle part of outer surface with 2 longitudinal furrows. Telson with 2 posterior lobes very asymmetrical, left considerably larger than right, subquadrate; lateral margins folded; left terminal margin with 2 small spines and stiff setae and right terminal margin with 4 rounded tubercles and stiff setae; anterior lobes unarmed, margins with stiff setae.

**Remarks:** This species is new to Korean waters. We examined only one relatively small female specimen. We could not read original description by Herbst (1804). De Haan (1849) described briefly left cheliped, left second ambulatory leg, eyestalk, antenna, third ambulatory leg and abdomen of *Pagurus asper*. Rathbun (1902) described antennal peduncle and left cheliped of *Dardanus haannii*. But he gave no figure. Miyake (1978) described briefly eyestalk, left cheliped, left second ambulatory leg, abdomen and telson of *Dardanus pedunculatus*. The present specimen agrees well with Miyake's description and especially with Rathbun's one in left cheliped. Nobody described third maxilliped and telson in detail. According to Miyake (1978), this species inhabits in shells of some gastropods (*Batillus cornutus*, *Pleuroploca trapezium*) that usually encrusted with 2-9 sea anemones, *Calliactis polypus* on sandy bottom in 10-50m deep. The present specimen was collected in fish trap and inhabited in shell of *Calloporomella excellens* (Sowerby) encrusted with 2 sea anemones.

**Range:** This species ranges widely in Indo-Pacific, from Hawaii and Japan to Timor and Seychelles.

8. *\*Paguristes acanthomerus* Ortmann, 1892 가시긴마디긴눈집게

Pömsöm (Kim, 1985)

**Material examined:** Sinchang, 1♂, 1♀, May 3, 1985 (H.S. Kim).

9. *Paguristes japonicus* Miyake, 1961 꼬마긴눈집게

Sögwip'o (Kim, 1973)

**Material examined:** Taep'o, 1♂, Feb. 13, 1987 (H.S. Kim); Sinch'ang, 1♀, May 3, 1985 (C.Y. Chang); Hoenggando, 1♂, May 3, 1985 (H.S. Kim).

10. *Paguristes ortmanni* Miyake, 1978 털보긴눈집게

Cheju (Kim, 1985); Mosŭlp'o (Kim, 1985); Sögwip'o (Kim, 1985); Marado (Oh, 1983); Sangch'ujado (Kim, 1973; Kim & Kim, 1986); Hoenggando (Kim, 1973; Kim & Kim, 1986); Sasudo (Kim, 1973)

**Material examined:** Sögwip'o, 4♂♂, 6♀♀, Apr. 23, 1987; Kŭmnyŏng, 154 individuals, Apr. 24, 1987; Taep'o, 1♂, Feb. 3, 1987 (H.S. Kim); Shinch'ang, 9♂♂, 4♀♀ (Iovig.), Feb. 10, 1987 (H.S. Kim); Piyangdo, 45 individuals, Feb. 9, 1987 (C.Y. Chang & S.M. Yoon); Chigwido, 1♂, Feb. 14, 1987 (H.S. Kim); Pŭphwan, 3♂♂, Feb. 13, 1987 (H.S. Kim); Taep'o, 2♂♂, 1♀, Feb. 13, 1987 (H.S. Kim); Sögwip'o, 1♂, Feb. 13, 1987, (H.S. Kim); Cheju, 16 individuals, May 1, 1985 (H.S. Kim); Piyangdo, 73 individuals, May 3, 1985; Cheju, 1♂, Apr. 30, 1985 (H.S. Kim).

**Remarks:** This species was previously known as *Paguristes barbatus* Ortmann, 1892 (Kim, 1973, p. 210, 597, text-fig. 42, pl. 5, fig. 23; Kim *et al.*, 1979, p. 109; Kim and Choe, 1981, p. 197; Kim and Kwon, 1982, p. 199; Lee *et al.*, 1984, p. 124). Among specimens collected in Kŭmnyŏng, one male specimen possesses right eyestalk that is shorter than left eyestalk.

**11. \**Paguristes seminudus* Stimpson, 1858** 발가숭이 긴눈집게

Sŏgwip'o (Kim & Choe, 1976)

**Material examined:** Hoenggando, 2♂♂, 1♀, May 3, 1985 (H.S. Kim).

**12. \**Trizopagurus strigatus* (Herbst, 1804)** 문옹고리무늬 집게

Pŏmsŏm (Kim, 1985)

Family Pomatochelidae Miers, 1879 뿔조개 집게 과

**13. \**Pomatocheles jeffreysii* Miers, 1879** 뿔조개 집게

Pŏmsŏm (Kim & Choe, 1976)

**Material examined:** Shinch'ang, 1♀, May 3, 1985 (H.S. Kim).

**Remarks:** This species was previously included in Pylochelidae (Kim and Choe, 1976).

Superfamily Paguroidea Latreille, 1803 집게 상과

Family Lithodidae Samouelle, 1819 왕게 과

**14. *Hapalogaster dentata* (De Haan, 1844)** 가시투성어리게

Sŏgwip'o (Kim, 1985); Sasudo (Kim, 1973); Hoenggando (Kim, 1973); Sangch'ujado (Kim, 1973; Kim & Kim, 1986)

**15. *Oedignathus inermis* (Stimpson, 1860)** 두드러기어리게

Hoenggando (Kim & Kim, 1986); Sangch'ujado (Kim & Kim, 1986)

Family Paguridae Latreille, 1803 집게 과

**16. *Pagurus angustus* (Stimpson, 1858)** 가늘몸참집게 (신칭)

Marado (Oh, 1983)

**17. *Pagurus dubius* (Ortmann, 1892)** 긴발가락참집게

Iho-ri (Kim, 1973); Sangch'ujado (Kim, 1973); Sasudo (Kim, 1973)

**Material examined:** Kŭmnyŏng, 3♂♂, 2♀♀, Apr. 24, 1987 (C.B. Kim); Shinchang, 3♂♂, 6♀♀ (ovig.), Feb. 10, 1987 (H.S. Kim); P'yosŏn, 342 individuals, Aug. 15, 1985; Mosŭlp'o 11♂♂, 1♀ (ovig.), Jan. 17, 1985.

**18. *Pagurus geminus* McLaughlin, 1976** 참집게

Cheju (Kim, 1973); Mosŭlp'o (Kim, 1973); Iho-ri (Kim, 1973); Sŏgwip'o (Kim, 1973; Kim, 1985); Udo (Kim, 1973); Marado (Oh, 1983); Sangch'ujado (Kim & Kim, 1986); Hoenggando (Kim & Kim, 1986); Sasudo (Kim & Kim, 1986)

**Material examined:** Sŏgwip'o, 7♂♂, 2♀♀, Apr. 22, 1987 (M.O. Song); Kŭmnyŏng, 125 individuals, Apr. 24, 1987 (C.B. Kim); Piyangdo, 15♂♂, 8♀♀ (4 ovig.), Feb. 9, 1987 (H.S. Kim); Sŏngsanpo'o, 3♂♂, 4♀♀ (ovig.), Feb. 12, 1987 (H.S. Kim); Chigwido, 1♂, Feb. 14, 1987, (H.S. Kim); Shinch'ang, 9♂♂, 2♀♀ (1 ovig.), Feb. 10, 1987 (H.S. Kim & C.Y. Chang); Pŭphwan, 4♂♂, Feb. 13, 1987 (H.S. Kim); Udo, 24 individuals (2 ovig.), Feb. 12, 1987 (K.S. Lee); Hamdŏk, 7♂♂, 5♀♀ (3 ovig.), Feb. 14, 1987 (H.S. Kim); Sŏgwip'o, 5♂♂, 4♀♀ (2 ovig.), Jan. 15, 1985; Piyangdo, 7♂♂, May 3, 1985; Mosŭlp'o, 61 individuals (21 ovig.), Jan. 17, 1985 (C.B. Kim).

**Remarks:** This species was previously known as *Pagurus samuelis* (Stimpson, 1857) (Kim, 1973, p. 228, 600, text-fig. 52, pl. 70, fig. 32).

**19. *Pagurus japonicus* (Stimpson, 1858)** 붉은눈자루참집게

Cheju Island (Kim, 1973); Cheju (Kim, 1973); Sŏgwip'o (Kim, 1973); Sŏngsanp'o (Kim, 1973); Mosŭlp'o (Kim, 1985); Marado (Oh, 1983); Sasudo (Kim, 1973)

**Material examined:** Kŭmnyŏng, 2♂♂, 8♀♀, Apr. 24, 1987; Piyangdo, 2♂♂, Feb. 9, 1987 (K.S. Lee); Chigwido, 1♂, 2♀♀, Feb. 14, 1987 (H.S. Kim); Supsŏm, 1♂, Feb. 14, 1987 (H.S. Kim); Pŭphwan, 2♂♂, Feb. 13, 1987 (H.S. Kim); Kap'ado, 1♂, 1♀ Jan. 17, 1985; Piyangdo, 1♂, May 3, 1985.

**20. *Pagurus lanuginosus* De Hann, 1849** 털다리참집게

Udo (Kim, 1973); Hoenggando (Kim, 1973); Marado (Oh, 1983); Sangch'ujado (Kim & Kim, 1986); Sasudo (Kim & Kim, 1986)

**Material examined:** Sŏgwip'o, 1♂, Apr. 23, 1987; Taep'o, 1♂, Feb. 23, 1987 (H.S. Kim); Piyangdo, 1♂, 1♀, May 3, 1985; Cheju, 1♂, May 1, 1985, (H.S. Kim).

**21. \**Pagurus megalops* (Stimpson, 1859)** 큰발참집게

Sŏgwip'o (Kim, 1973)

**22. \*\**Pagurus ochotensis* Brandt, 1851** 북방참집게

**Material examined:** Hoenggando, 1♂, May 3, 1985 (H.S. Kim).

**23. *Pagurus pectinatus* (Stimpson, 1858)** 빗참집게

Sŏgwip'o (Kim, 1973)

**24. \**Pagurus pilosipes* (Stimpson, 1858)** 줄무늬참집게 (신칭)

Marado (Oh, 1983)

**25. *Pagurus similis* (Ortmann, 1892)** 얼룩참집게

Cheju Island (Kim, 1973); Cheju (Kim, 1973; Kim, 1985); Mosŭlp'o (Kim, 1985); Pomog-ri (Kim, 1985); Sangch'ujado (Kim & Kim, 1986)

**Material examined:** Sŏgwip'o, 2♂♂, 6♀♀, Apr. 22, 1987; Kŭmnyŏng, 2♂♂, 4♀♀, Apr. 24, 1987; Sŏgwip'o, 7♂♂, 6♀♀, Apr. 23, 1987; Hallim, 1♂, 1♀, Sep. 30, 1987 (H.S. Kim); Piyangdo, 1♂, 3♀♀, Feb. 9, 1987 (K.S. Lee); Chigwido, 6♂♂, 1♀, Feb. 14, 1987 (H.S. Kim); Shinch'ang, 3♀♀, Feb. 10, 1987, (H.S. Kim); Supsŏm, 6♂♂, 1♀, Feb. 14, 1987 (H.S. Kim); Pŭphwan, 1♂, Feb. 13, 1987 (H.S. Kim); Sŏgwip'o, 1♂, 1♀, Feb. 13, 1987 (H.S. Kim); Taep'o, 3♂♂, 3♀♀, Feb. 13, 1987 (H.S. Kim); Sŏgwip'o, 1♂, Jan. 19, 1985; Sŏgwip'o, 2♂♂, Aug. 16, 1985; Piyangdo, 1♂, 4♀♀, May 3, 1985 (H.S. Kim); Kap'ado, 1♂, 1♀, Jan. 17, 1985; Cheju, 1♂, Apr. 30, 1985; Mosŭlp'o, 1♀, Jan. 17, 1985 (C.B. Kim).

**26. \**Pagurus triserratus* (Ortmann, 1892)** 꼬마참집게

Sŏgwip'o (Kim, 1973)

Superfamily Galatheaidea Samouelle, 1819 새우붙이 상과

Family Chiostylidae Ortmann, 1892 새우아재비 과

**27. \**Uroptychus scandens* Benedict, 1903** 바다조름새우아재비

Sŏgwip'o (Kim & Choe, 1976)

**28. \**Uroptychus zezuensis* Kim, 1972** 제주새우아재비

Sŏgwip'o (Kim, 1973)

Family Galatheididae Samouelle, 1819 새우붙이 과

**29. *Galathea orientalis* Stimpson, 1858** 새우붙이

Sŏgwip'o (Kim, 1973); Hoenggando (Kim, 1973); Sangch'ujado (Kim & Kim, 1986)

**Material examined:** Kŭmnyŏng, 1♂, 1♀, Apr. 24, 1987 (C.B. Kim & M.O. Song); Kap'ado, 1♂, Jan. 17, 1985 (C.B. Kim); Hoenggando, 1♂, 1♀, May 3, 1985 (H.S. Kim).



30. *\*Galathea pubescens* Stimpson, 1858 털보새우불이  
Sögwip'o (Kim, 1973)
31. *\*Munida scabra* Henderson, 1885 가시새우불이  
East of Cheju I. (Kim, 1973);  
Family Porcellanidae Haworth, 1825 게불이 과
32. *Pacychelys stevensii* Stimpson, 1858 게불이  
Hoenggando (Kim, 1973)
33. *Petrolisthes japonicus* (De Haan, 1849) 갯가게불이  
Cheju (Kim, 1973); Aewöl (Kim, 1973); Sögwip'o (Kim, 1973; Kim, 1985); Namwön (Kim, 1973); Söngsanp'o (Kim, 1973); Pomog-ri (Kim, 1985); Marado (Oh, 1983); Hoenggando (Kim, 1973); Sasudo (Kim & Kim, 1986)  
Material examined: Sögwip'o, 1♂, Apr. 22, 1987; Piyangdo, 1♂, May 2, 1985 (H.S. Kim); Sögwip'o, 2♂♂, 3♀♀, Jan. 15, 1985; Söngsanp'o, 3♂♂, Jan. 18, 1985.
34. *\*Porcellana ornata* Stimpson, 1858 가시게불이  
Sögwip'o (Kim, 1973)

## DISCUSSION

Eighteen anomuran species in 7 families were identified during the present survey period from twelve localities in Cheju Island. *Dardanus pedunculatus* is newly known from Korean waters. *Callinassa japonica* and *Pagurus ochotensis* are unrecorded by this time in Cheju Island and its adjacent waters.

The total number of the anomuran species which include the literature records and the present materials in Cheju Island and its adjacent waters are 34 species in nine families. Thirty-four species occupy 58.6% of 58 species that found in Korean waters up to now. The percentage is very close to 56.8% (104/183) in the case of brachyurans (Kim and Chang, 1985). Seventeen (50%) of 34 species is only reported in Cheju Island and its adjacent waters, and seven (20.6%) of 34 species are southern form. In addition to seven southern form, 4 species (11.8%) are northern form and 23 species (67.6%) temperate form. Therefore, Cheju Island and its adjacent waters have the largest number of species which were found only in this region in Korean waters in anomura and comprise the largest number of southern form of anomuran species in four regions (Japan Sea, Korea Strait, Yellow Sea and Cheju I. waters) of Korean waters (Kim, 1986). These findings are in accord with the environmental factors that Cheju Island and its adjacent waters are the most strongly influenced by Tsushima Warm Current and accordingly its water temperature is the highest in the Korean waters (Kim, 1986). Of 24 species whose habitats were well known, 18 species (75%) inhabit sandy and rocky bottom. This is in accord with the fact that the coastal bottoms of Cheju Island and its adjacent waters mainly consist of sand and rock (Kim, 1986).

## ABSTRACT

The authors prepared a checklist of the anomurans in Cheju Island and its adjacent waters based upon the literature records and the materials collected chiefly during the

period of present survey from September 30, 1986 to April 24, 1987 from 12 localities in Cheju Island. In the present checklist, the materials were identified into 18 species in 7 families, in which 2 species (*Callinassa japonica*, *Pagurus ochotensis*) were unrecorded ones from Cheju Island and its adjacent waters and *Dardanus pedunculatus* (Herbst) was newly recorded from Korean waters. The authors gave the description and figures of *Dardanus pedunculatus*. Out of 34 anomuran species which were recorded in this checklist, 16 species in 9 families only appeared in literature records. 34 species occupy 58.6% of 58 species that were recorded from Korean waters up to now. 17 species (50%) of 34 species were reported only in Cheju Island and its adjacent waters, and 7 species (20.6%) were southern form.

## REFERENCES

- Bowman, T. E. and L. G. Abele, 1982. Classification of the recent Crustacea. In: The biology of Crustacea, vol. 1, Systematics, the fossil record, and biogeography, edited by L.G. Abele, Academic Press, pp. 1-27.
- Haan, W. De, 1849. Crustacea. In: P.F. De Siebold, Fauna Japonica, 244 pp., pls. 1-55.
- Holthuis, L. B. and T. Sakai, 1970. Ph. F. Von Siebold and Fauna Japonica. A history of early Japanese zoology. Academic Press of Japan, 323 pp., pls. 1-32.
- Kim, H. S., 1973. Illustrated encyclopedia of fauna & flora of Korea, vol. 14, Anomura & Brachyura. Samhwa Publishing Co., 694 pp., text-figs. 1-264, pls. 1-122. (In Korean with English catalogue)
- Kim, H. S. 1973a. Report on a collection of animals from Baegryeong I. and Daecheong I. College Review, published by Coll. Liber. Arts Sci., SNU, **19**, 1/2: 427-436. (In Korean)
- Kim, H. S., 1985. Systematic studies on crustaceans of Korea. 1. Decapods. Proc. Coll. Natur. Sci., SNU, **10**, 1: 63-94. (In Korean)
- Kim, H. S., 1986. On the geographical distribution of anomuran and brachyuran crabs in Korean waters. Korean J. Syst. Zool., **2**, 2: 67-78.
- Kim, H. S. and C. Y. Chang, 1985. The brachyuran crabs of Cheju Island, Korea (Crustacea: Decapoda). Korean J. Syst. Zool., **1**, 1-2: 41-60, figs. 1-4.
- Kim, H. S. and B. L. Choe, 1976. A report on four unrecorded anomuran species (Crustacea, Decapoda) from Korea. Korean J. Zool., **19**, 1: 43-49, text-figs. 1-4.
- Kim, H. S. and B. L. Choe, 1981. The fauna of marine invertebrates in Ulreung Is. and Dogdo Is. Rep. KACN, no. 19: 193-200. (In Korean)
- Kim, H. S. and I. H. Kim, 1985. Marine invertebrate fauna of Komundo I., Taesambudo I. and Sangpaekdo I. Report on the Survey of Natural Environment in Korea, no. 4: 183-206. (In Korean)
- Kim, H. S. and I. H. Kim, 1986. Marine invertebrate fauna of Ch'ujado Islands. Report on the Survey of Natural Environment in Korea, no. 5: 309-332. (In Korean)
- Kim, H. S. and D. H. Kwon, 1982. Marine invertebrate fauna in the vicinity of Wando Island. Report on the Survey of Natural Environment in Korea, no. 2. The Islands adjacent to Wando: 187-206. (In Korean)
- Kim, H. S. and K. S. Lee, 1978. Report on a collection of marine animals from Donggyeogryeolbi I., Seogdo I. and Gungsi I. Rep. KACN, no. 12: 97-101. (In Korean)
- Kim, H. S., K. S. Lee and I. H. Kim, 1979. A faunal and ecological study on the crustaceans in the lower reaches of the Nagdong River where migratory birds come flying. Bull. KACN, **1**: 287-325. (In Korean)

- Kim, H. S., K. S. Lee, W. Kim and D. H. Kwon, 1981. A faunal and ecological study on the crustaceans in the intertidal zones near Incheon and southern part of Ganghwa Island. *Bull. KACN*, **3**: 279-309. (In Korean)
- Kim, H. S., I. K. Lee, C. H. Koh, I. H. Kim, Y. B. Suh and N. Sung, 1983. Studies on the marine benthic communities in inter and subtidal zones. I. Analysis of benthic community structure at Aninjin, east coast of Korea. *Proc. Coll. Natur. Sci., SNU*, **8**, 1: 71-108. (In Korean)
- Kim, H. S. and B. J. Rho, 1971. On the distribution of the benthic animals of Korean coastal seas. 1. Jeju Island region. Report for IBP, no. 5, Korean National Committee for the IBP : 7-27.
- Kim, H. S., B. J. Rho, S. Y. Hong, I. H. Kim, S. Shin and C. H. Han, 1979. The marine invertebrate fauna in the southern part of Geoje Island and its adjacent five islands. *Rep. KACN*, no. 14: 103-126. (In Korean)
- Lee, I. K., H. S. Kim, C. H. Koh, J. W. Kang, S. Y. Hong, S. M. Boo, I. H. Kim and Y. C. Kang, 1984. Studies on the marine benthic communities in inter- and subtidal zones II. Qualitative and quantitative analysis of the community structure in south-eastern coast of Korea. *Proc. Coll. Natur. Sci., SNU*, **9**, 1: 71-126. (In Korean)
- Lee, I. K., H. S. Kim, B. L. Choe and H. B. Lee, 1985. Studies on the marine communities in inter- and subtidal zones III. Qualitative and quantitative analysis of the community structure in western coast of Korea. *Proc. Coll. Natur. Sci., SNU*, **10**, 2: 57-100. (In Korean)
- Lewinsohn, C., 1969. Die Anomuren des roten Meeres (Crustacea Decapoda: Paguridea, Galatheidea, Hippidea). *Zool. Verh., Leiden*, no. 104: 1-213, pls. 1-2.
- Miyake, S., 1978. The crustacean Anomura of Sagami Bay. Biological Laboratory, Imperial Household, Japan, English part, 200 pp., pls. 1-4, Japanese part, 161 pp.
- Miyake, S., 1981. Anomura. In: *New illustrated encyclopedia of the fauna of Japan*. vol. 2, Hokuryu-kan Publishing Co., pp. 630-652.
- Miyake, S., 1982. Japanese crustacean decapods and stomatopods in color, vol. I, Macrura, Anomura and Stomatopoda. Hoikusha Publishing Co., LTD., Japan, i-vii, 261 pp., pls. 1-56. (In Japanese)
- Oh, S. C., 1983. Taxonomical studies on the hermit crabs (Decapoda, Anomura) from Mara Islet, Cheju Island. *J. Sci. Edu. Cent., Cheju Teachers College*, 7: 97-124, pls. 1-4. (In Korean)
- Rathbun, M. J., 1902. Japanese stalk-eyed crustaceans. *Proc. U. S. Nat. Mus. Washington*, **26**: 23-55.
- Stimpson, W., 1858. *Prodromus descriptionis animalium evertbratorum, quae in expeditione ad Oceanum Pacifican Septentrionalem, observavit et descripsit*. *Proc. Acad. Nat. Sci.*, vol. 10, Philadelphia, pp. 225-252.
- Stimpson, W., 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853-1856. *Smithsonian Miscellaneous Collections*, **49**: 1-240, pls. 1-26.

RECEIVED: 13 OCTOBER, 1987

ACCETED: 30 OCTOBER, 1987